Fermilab

TM-671
2941.002

TESTS OF MULTIPLE PULSING OF HORN POWER SUPPLY

R. TRENDLER

June 14, 1976

Tests were performed on the horn power supply at low currents (~40 KA) to measure circuit behavior when firing each of the three banks separately per Reference 1.

Attached is a calculated plot showing the circuit behavior of the multipulse scheme compared to a normal pulse for the single horn case.

Also shown is a photo of the actual horn current (lower trace) and Bank 3 voltage (upper trace). Bank 3 was the first bank fired. Note that the Bank 3 voltage does increase when subsequent banks are fired. This demonstrates that the tubes do behave bilaterally after having been once fired.

This leads to the conclusion that horn current pulse width with the present circuit is not markedly widened as a result of multipulsing, and that diodes in series with the series ignitrons would be an important addition for minimized charging voltages.

References

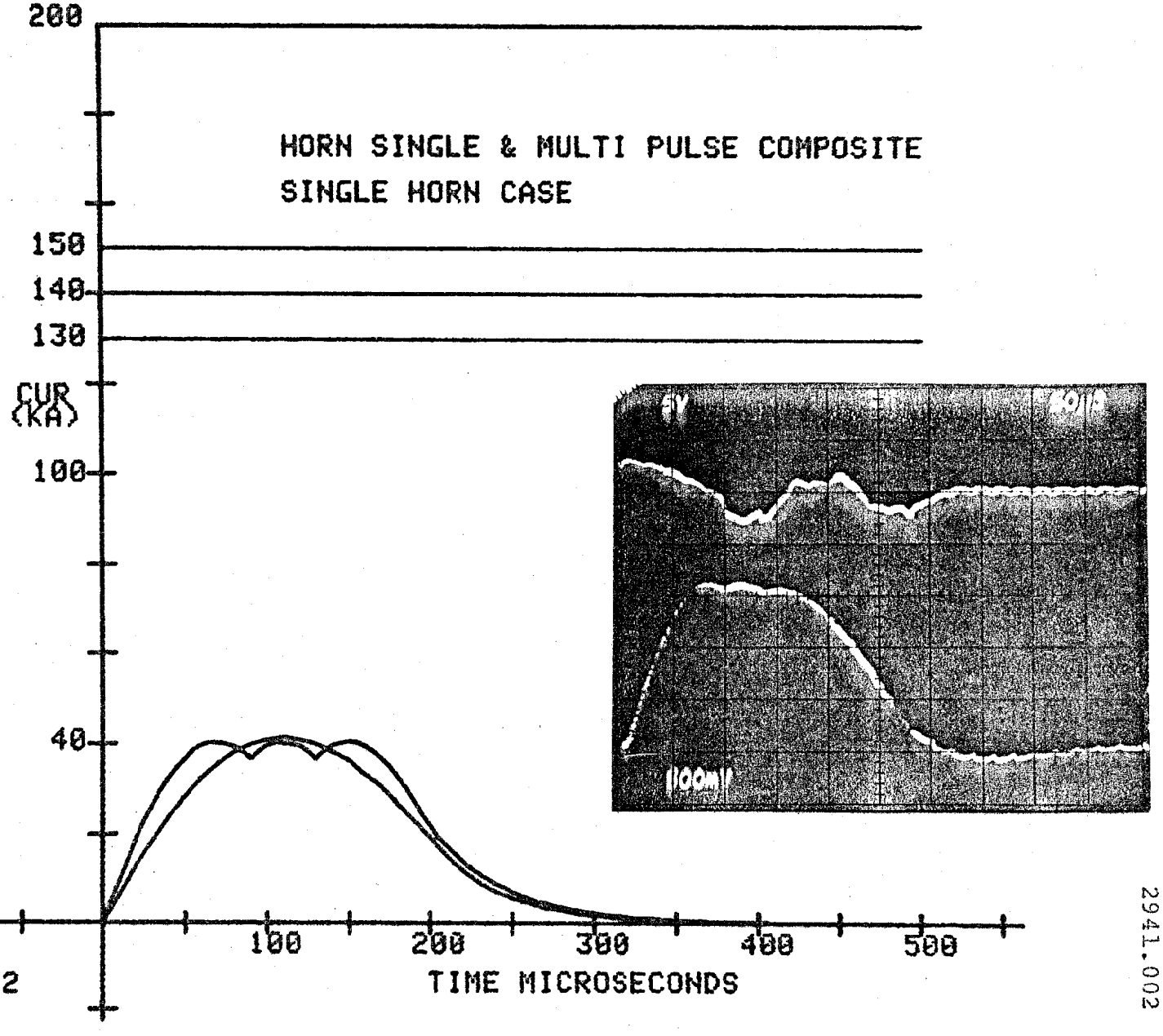
R.C. Trendler, "Study of Horn Pulse Stretching Using Multipulse Techniques." Fermi National Accelerator Laboratory, TM-665, No. 2940.000 - June 8, 1976.

```
120 T1=5.0E-6
130 R1=0.0027
140 R3=0.01
150 R4=3.0E-4
160 L1=6.0E-7
170 L3=9.0E-7
180 L4=1.3E-6
190 C=8.0E-4
200 V=2800

720 T1=5.0E-6
730 R1=0.0027
740 R3=0.01
750 R4=3.0E-4
760 L1=6.0E-7
770 L3=9.0E-7
780 L4=1.3E-6
790 C=8.0E-4
800 V=1500

1590 T1=1.0E-5
1600 R1=9.0E-4
1610 R3=0.01
1620 R4=3.0E-4
1630 L1=2.0E-7
1640 L3=1.0E-6
1650 L4=1.3E-6
1660 C=0.0024
1670 V=1700

670 FOR I=0 TO 18
~~690 FOR I=0 TO 8~~
1010 FOR I=0 TO 12
```



TM-671
2941.002